




First record of *Ramphocorixa rotundocephala* Hungerford, 1927 (Hemiptera, Corixidae) for Colombia

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Abstract

In the course of research conducted on *Procambarus clarkii* (Girard, 1852) in Colombia, *Ramphocorixa rotundocephala* Hungerford, 1927 was collected in Güitoke Lake, outside the town of Gachantivá, Boyacá. The species was identified from the adult males found there. This species of aquatic insect occurs mostly in Central and North America, but there are also two records from Venezuela in South America. This is the first record of this species and its genus for Colombia. This finding increases this species' known distribution on the continent and the diversity of hemipterans in northern South America.

Keywords

Boyacá, Güitoke, lake, South America

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Introduction

Hemiptera of the family Corixidae, commonly known as water boatmen, are aquatic insects of between 2.6 and 16 mm in length, which mainly inhabit lentic and oligotrophic freshwater ecosystems. Some species can tolerate pollution, as well as relatively shallow, saline habitats (Aristizábal 2017). They are the only omnivorous aquatic family of the infraorder Nepomorpha, and their presence may depend on the composition and abundance of macrophytes (Millspaugh 1949; Scudder 1976; Stonedahl and Lattin 1986).

Corixidae is the most abundant aquatic family of the suborder Heteroptera. Globally, it contains around 607 species distributed among 35 genera, of which only 13 species have been recorded in the Neotropics (Stonedahl

and Lattin 1986; Roble and Hoffman 2000; Barbosa and Rodrigues 2015; Polhemus and Polhemus 2008; Mazzucconi et al. 2008; Topkara 2013; Aristizábal 2017). Until now, six genera and 13 species of Corixidae were known in Colombia, including *Centrocorisa kollari* (Fieber, 1851); *Trichocorixa reticulata* (Guérin-Méneville, 1857); *T. orinocoensis* Sailer, 1948; *Heterocorixa hesperia* (White, 1879); *Tenagobia socialis* (White, 1879); *T. aconita* Nieser, 1977; *Neosigara columbienensis* Lundblad, 1928; *N. murilloi* Hungerford, 1948; *N. aristera* Nieser & Padilla-Gil, 1992; *N. sterea* Nieser & Padilla-Gil, 1992; *N. akanthinomeros* Padilla-Gil & Nieser, 1994, *N. paramo* Tinerella & Polhemus, 2006, and *Orocorixa makrocheira* Nieser & Padilla-Gil, 1992. The

genus *Ramphocorixa* Abbott, 1912 currently includes two described species, and these have been reported mostly in Central and North America. *Ramphocorixa rotundocephala* has additionally also been recorded in South America, in 1936 on Margarita Island and in 1937 on the Paraguaná Peninsula (Nieser 1969). In the present study, the genus *Ramphocorixa* is recorded for the first time in Colombia, from a lake located in the department of Boyacá.

Methods

Güitoque Lake is located outside the town of Gachantivá, Boyacá, in the Cordillera Oriental of Colombia, at an altitude of 2350 m a.s.l. It has a total area of 0.24 ha and a maximum depth of 1.6 m. This lake is characterized as being small, with sparse riparian vegetation of both trees and shrubs (Fig. 1). It contains emergent macrophytes. *Ramphocorixa rotundocephala* specimens were collected in November 2019. For this, a 250 µm hand net was used, following the methodology established by Alba-Tercedor et al. (2005), which consists of making several passes with a hand net in the littoral zone, within a defined time interval. The collected material was deposited into plastic bags and fixed with 96% alcohol. In the laboratory, the Corixidae were isolated, using a stereomicroscope (ZEISS stemi 305), and placed



Figure 1. Güitoque Lake, Boyacá, Colombia.

in vials with 70% alcohol. The obtained specimens were compared with descriptions in the taxonomic keys by Hungerford (1948), Nieser (1969), and Fernández and Domínguez (2009). A male was dissected, and its genital structure was treated with 90% acetic acid and placed in glycerin, according to the methodology of Fonseca et al. (2017). Afterwards, the specimens were deposited in the entomological collection of the Luis Gonzalo Andrade Museum of the Universidad Pedagógica y Tecnológica de Colombia (UPTC).

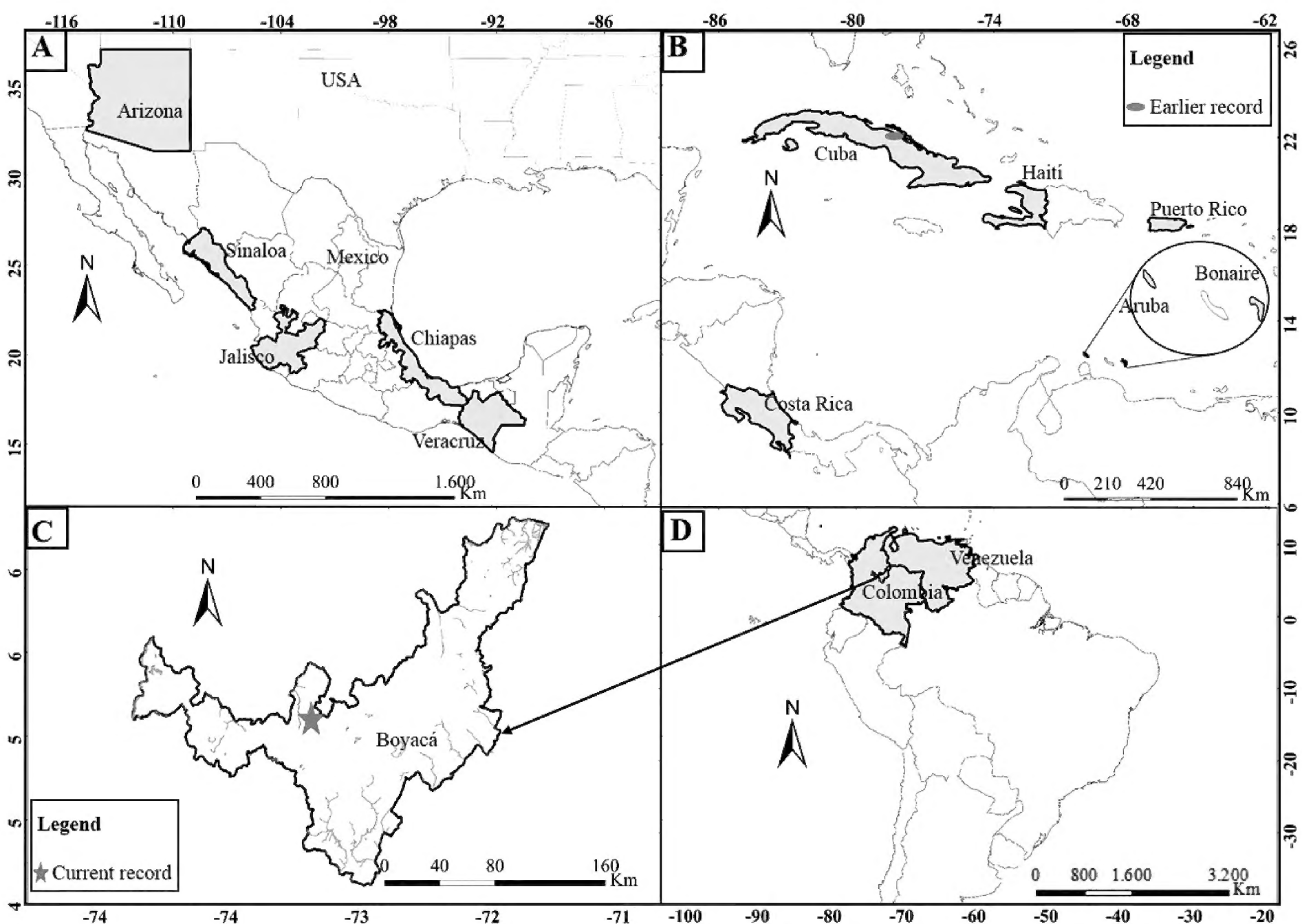


Figure 2. Map showing the previous record of *Ramphocorixa rotundocephala* in Cuba and the new record in Colombia. Blue star = new record in Boyacá (C), Colombia. Red circle = earlier record (B). On the map the countries with previous records are named. Gray-shaded areas = countries and states in USA and Mexico where *R. rotundocephala* has been reported.

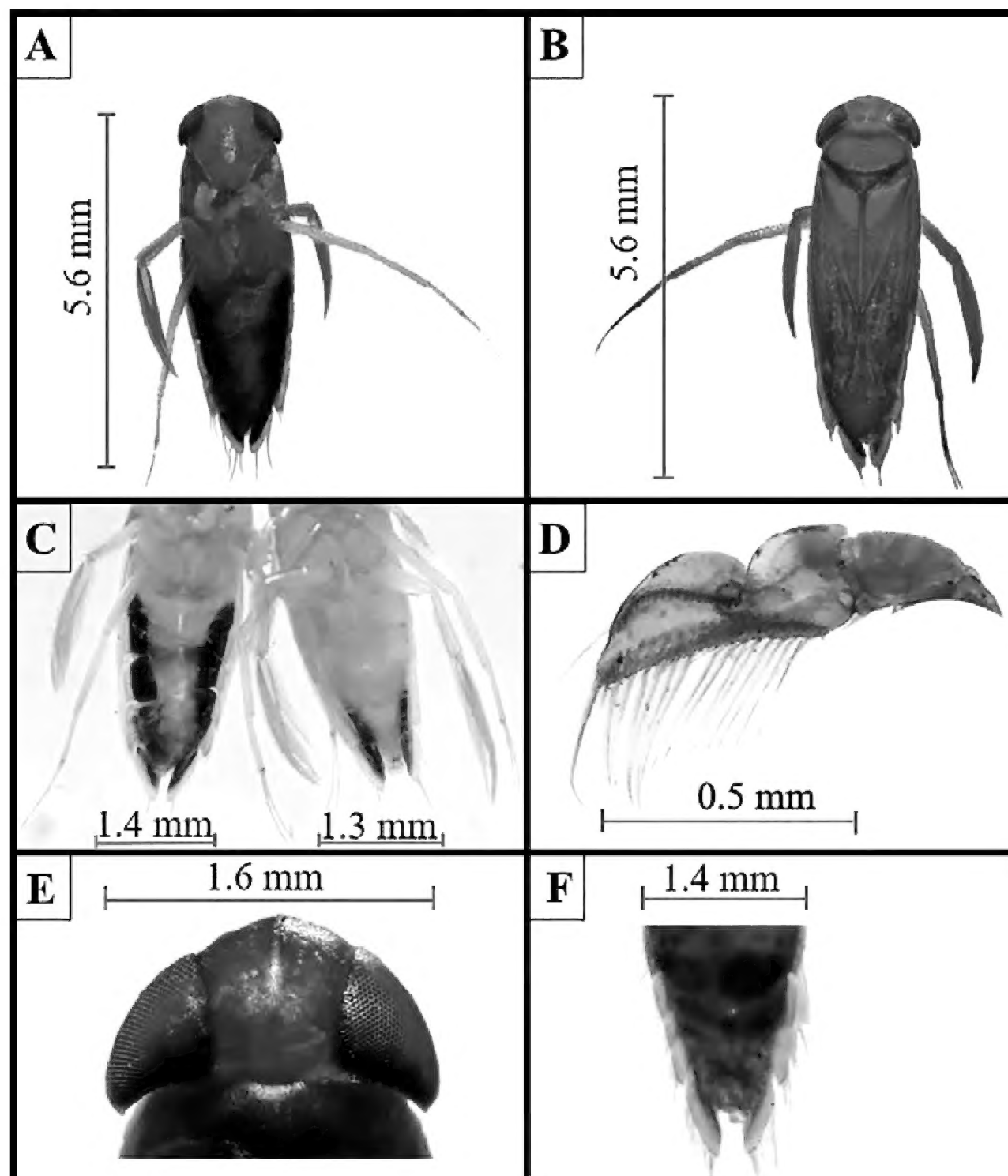


Figure 3. *Ramphocorixa rotundocephala*. **A.** Male ventral view. **B.** Male dorsal view. **C.** Male and female with a color difference in the sternites. **D.** Male front pala. **E.** Male head. **F.** Male abdomen.

Results

Ramphocorixa rotundocephala Hungerford, 1927

New records. COLOMBIA – Boyacá, Gachantiva, Güitoke Lake; 05°42.21'N, 073°32.70'W (Fig. 2); 2350 m a.s.l.; 18.XI.2019; Mabel Pimiento, Sandra Fernández & Camila Romero leg.; UPTC-In-00227; 1 ♂ adult, 5.6 mm; 1 ♀ adult, 5.7 mm.

Identification. *Ramphocorixa rotundocephala* is distinguished by both sexes having a rounded head. It has a smaller, less prominent keel than that of *Ramphocorixa acuminata* (Uhler, 1897). It has a head width of less than 2 mm (1.6 mm) (Fig. 3a). Frontal fovea are broad and concave in males. Pronotum short, with four crossed, dark bands (Fig. 3b). Head, legs, and thorax white to yellow. Palar claw serrated. Hemelytra with longitudinal reticulations. Strigil present in the male. Female with abdominal symmetry, while the male presents dextral asymmetry. Abdominal bands dark brown to black, present in males from the first segment and in females only on the last two sternites (Fig. 3c). Male front pala very similar to *R. acuminata* but with a deep dorsal cleft and no curvature of the pegs at the base (Fig. 3d). Male genital capsule as seen in Figure 4.

Habitat. The specimens were found in the littoral zone of the lake, near macrophytes (*Eleocharis filiculmis* Kunth and *Juncus microcephalus* Kunth), and in riparian, shrubby vegetation.

Discussion

This is the first record of *Ramphocorixa rotundocephala* for Colombia, increasing to seven the number of genera and to 14 the number of species of the Corixidae family reported from the country. It also constitutes the third record of this species from South America, thus expanding the known distribution of this species further to the south on the American continent. The discovery of these

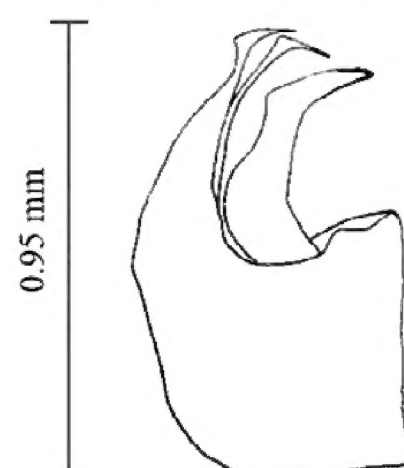


Figure 4. *Ramphocorixa rotundocephala* male genital capsule.

aquatic hemipterans in isolated lentic ecosystems, without permanent connections to other aquatic ecosystems, as is the case of Güitoke Lake, opens the door to new studies on the mechanisms of their dispersion.

The scarcity of records of *R. rotundocephala* from various South American aquatic ecosystems indicates that the distribution of this species could potentially be much more widespread, or its distribution could be influenced by unknown factors. The majority of the records are from islands off the continent, most recently in Cuba in 2002 (Riviaux et al. 2010). The first record of *R. rotundocephala* on Margarita Island, Venezuela, and its occurrence on Aruba, Bonaire, and Puerto Rico, were part of the collection for the Zoological Museum, University of Copenhagen, compiled by Nieser (1969). From North America, there are records from the 1940s from Mexico (Chiapas, Veracruz, Sinaloa, and Jalisco) and the USA (Arizona) (Hungerford 1948).

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Authors' Contributions

MPO wrote the paper, checked the organisms, identified the species and analyzed the data together with IGG and YHM. MPO took the photographs and made the drawings of the document. MPO and IGG gathered and organized the field data for this study. YHM checked the document.

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